20 years Facilitating Agricultural Resource Management Systems FARMS

Matt Vinzant

FARMS Project Manager

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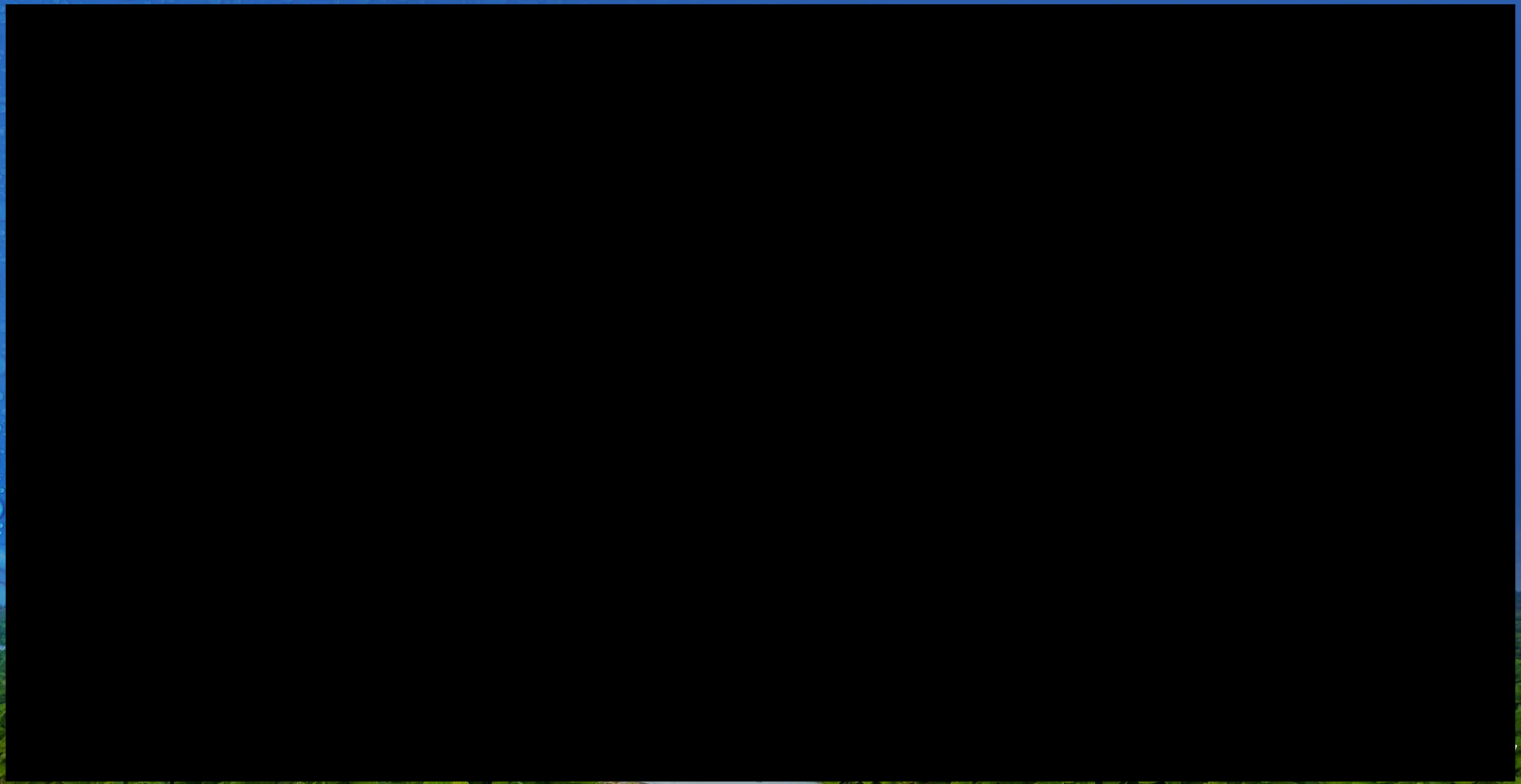

FARMS Program Status

- 245 Board-approved projects
- 31.8 MGD projected groundwater offset
- Total invested: ~$88.5 M since 2003
- District Costs $51.3 M
- District 58%/Farmer 42%
- $2.43/1,000 gallons saved
- 90% of FARMS projects still active

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Types of FARMS Projects

- Alternative Water Supply
- Conservation
- Cold Protection
- Nutrient Reduction or Retention

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Mini-FARMS Program Details

- Cost Share Reimbursement Program
- Incentivize Implementation of Ag Water BMPs
- Districtwide
- Low Cost – Small Projects
- 75% Reimbursement Rate
- $10,000 Maximum Reimbursement
- 2 Projects per Year / 5 Lifetime Total

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Mini-FARMS

- 342 District-funded projects
- $1.5 million reimbursed
- 1.5 MGD estimated groundwater reduction

Alternative Water Supply

- Replacing groundwater use with surface water use
  - Existing reservoir
  - Reclaimed water
  - Excavated reservoir
- Higher costs but greater groundwater reductions
- Lower pumping costs
- Sometimes better water quality
  - Lower salt content
  - Lower pH
- Average 30% reduction in groundwater use

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Conservation

- Automated pump control
- Some irrigation conversions
- Weather stations
- Irrigate per ET
- Grower convenience
- Lower cost, but lower reductions
- 5-10 % reductions in use

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Cold Protection Projects

- Wind Machines for Blueberries
- Crop cloth for Strawberries
- Alternative water supply for a variety of crops
- Saved 122 million gallons per year

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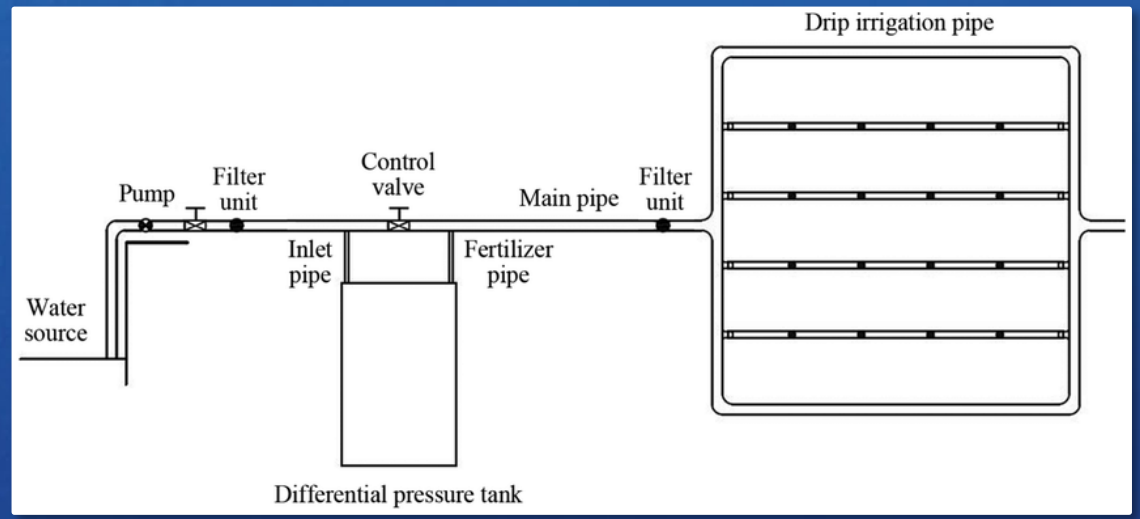
Nutrient Management Components

- Funded as part of groundwater reduction projects
- In the springs region since 2007
- Districtwide since 2020
- 15 Projects
- 5,100 pounds of Nitrogen per year



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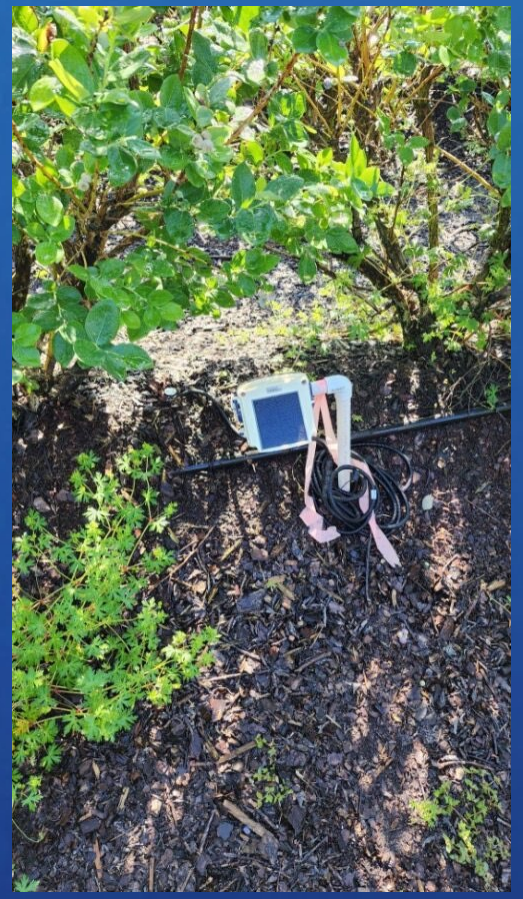
Water Quality – Mini FARMS

- Soil Moisture Probes with Salinity Measurements
- Fertigation – Reduces Nitrogen Leaching in Groundwater



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Challenges for the FARMS Program

- Overcoming grower reluctance to participate
- Areas of geology and hydrology unsuitable for AWS
- Compatibility between the permitted quantity (and size of the farm) and the cost benefit metric
- First come / First served nature of the program
- Increased documentation requirements for surface water use
- Increased concern for food safety and potential for disease from surface water

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Karst Underwater Research

KUR Mission Statement: Committed the preservation and protection of Karst aquifers and the quality of their water by conducting relevant scientific research and documentation of surface features and corresponding underwater caverns and conduits.

- 501c3 Not For Profit Organization
- Committed to Exploration, Education, and Preservation
- Specialize in logistically challenging dives

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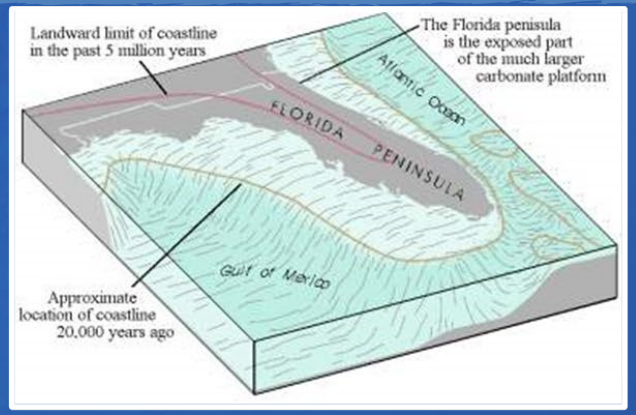
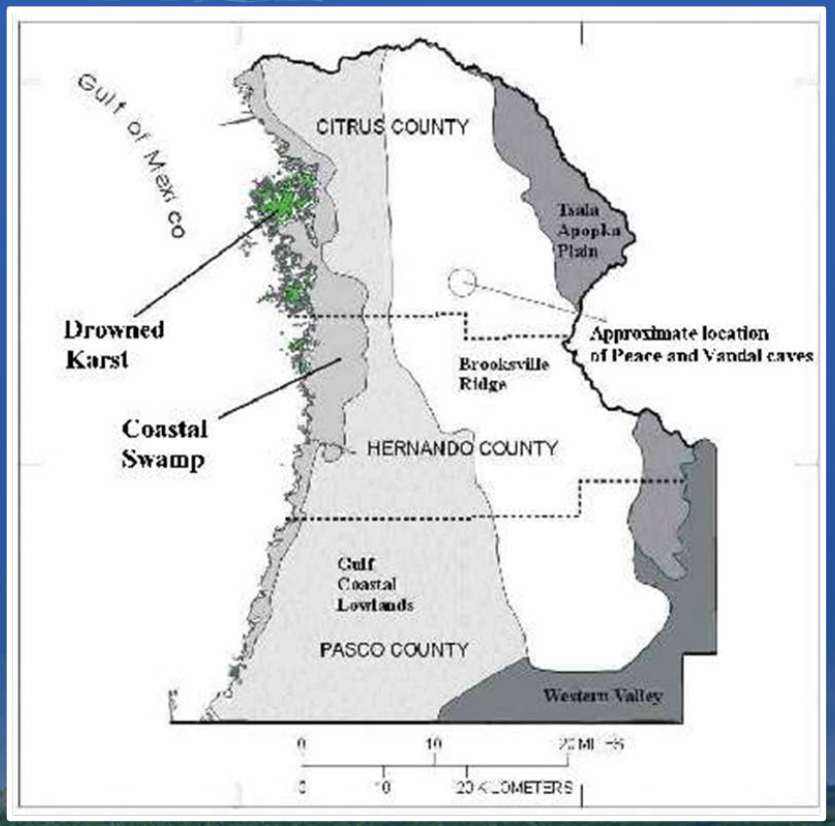
What is Karst?

- **Karst topography** is a landscape formed from the dissolution of soluble rocks such as limestone.
- Mildly acidic water starts to break down the surface of bedrock in joints.
- Cavities become larger and a drainage system may form.





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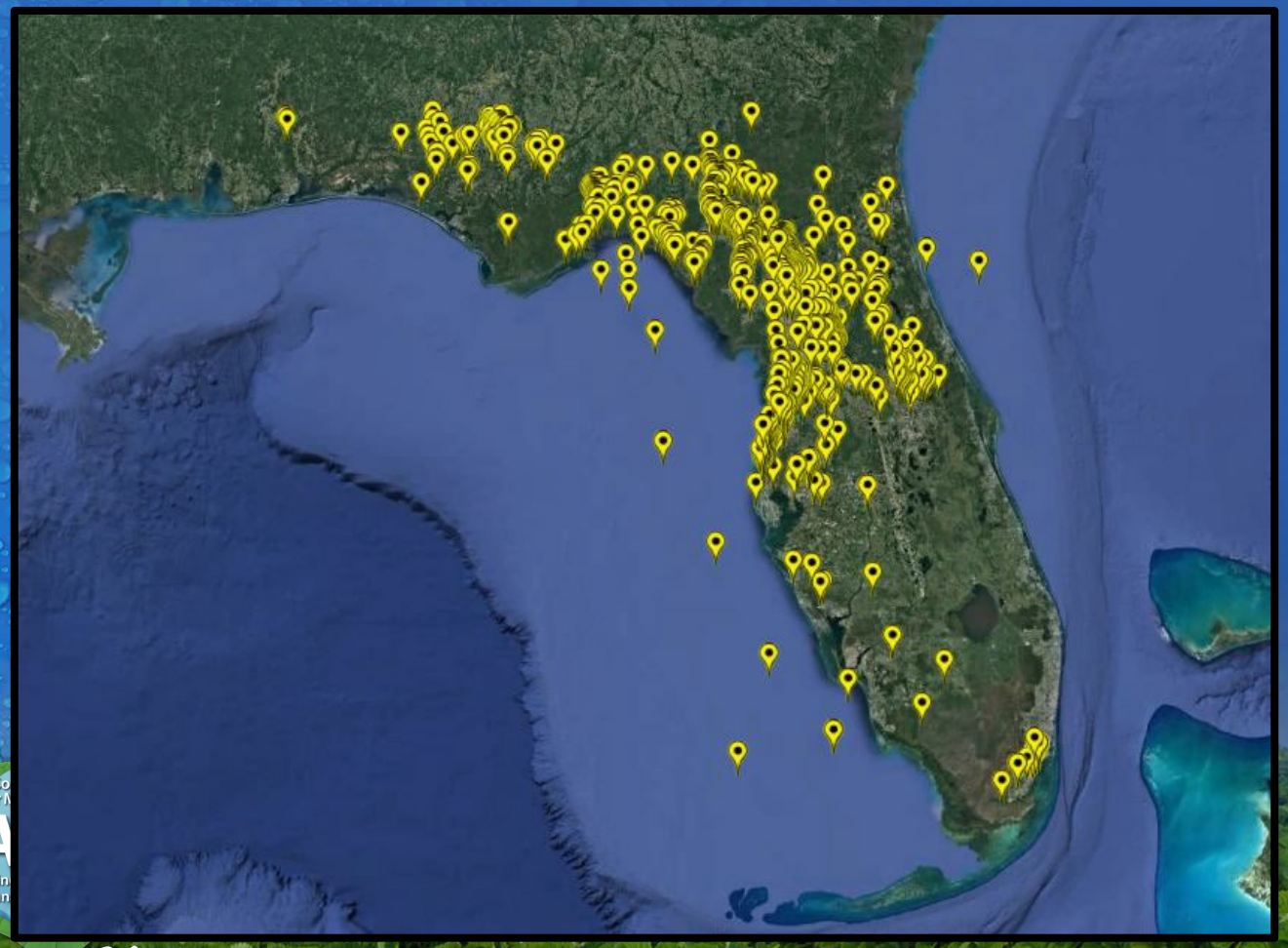
Florida's Carbonate Platform

-Known Caves: Windows the Aquifer -



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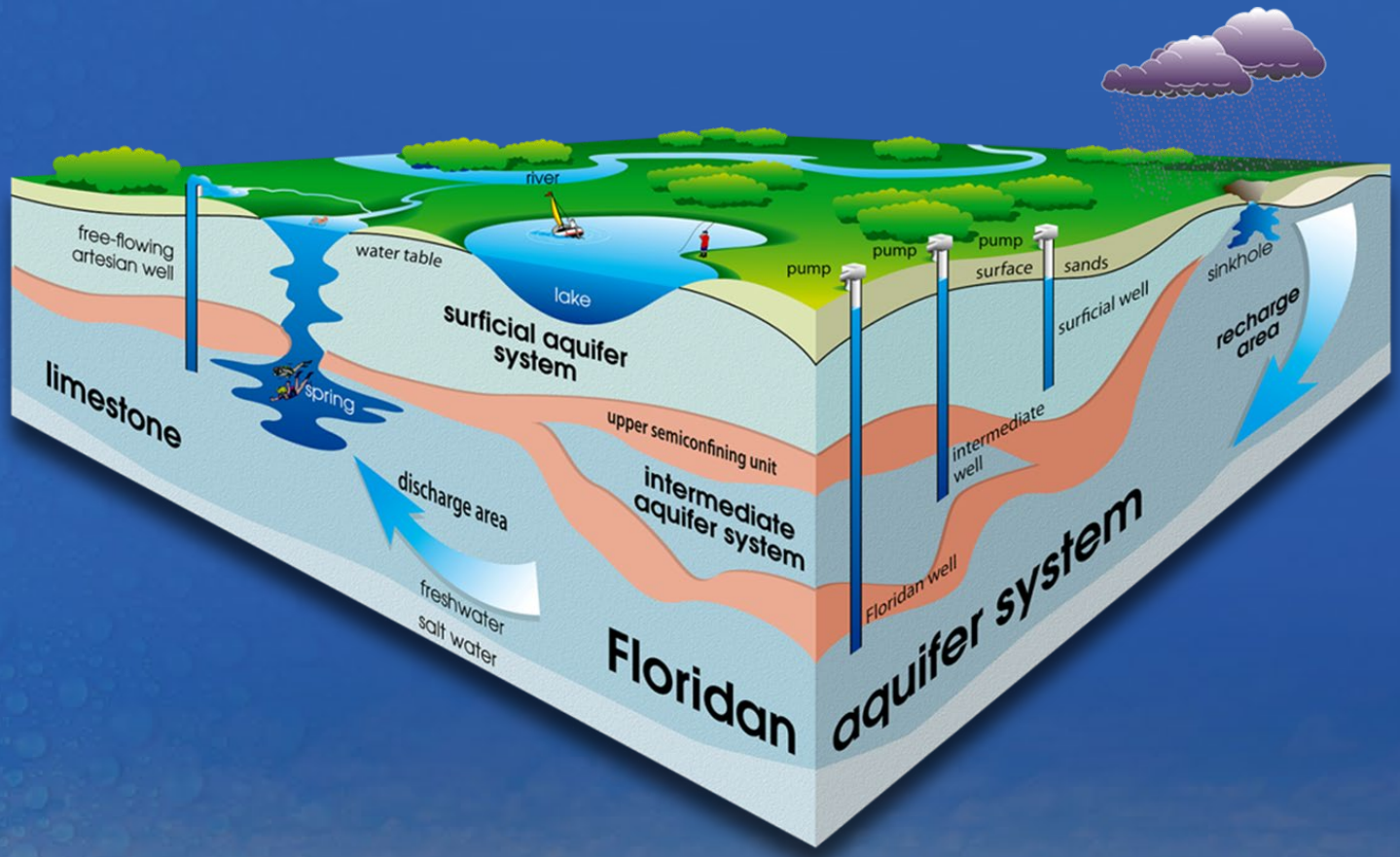
- Most drinking water from wells
- Surface activities directly effect groundwater
- High infiltration rates
- Shallow karst and fractures
- Pollutants move quickly
- Public supply, irrigation, and other water use directly effect groundwater



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WELLS

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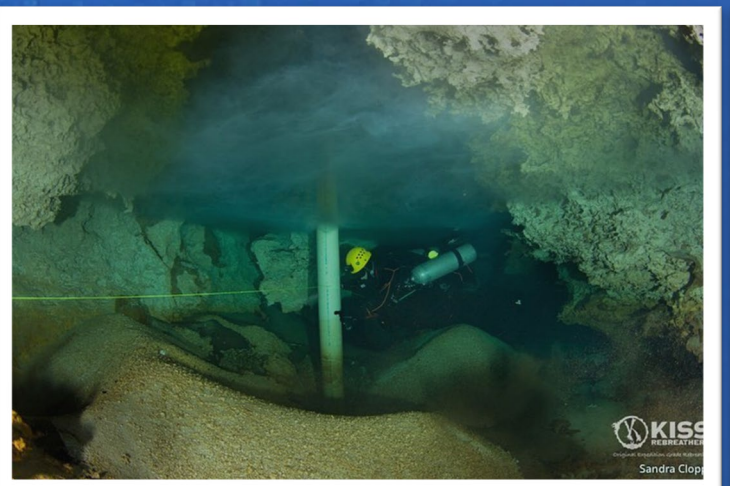

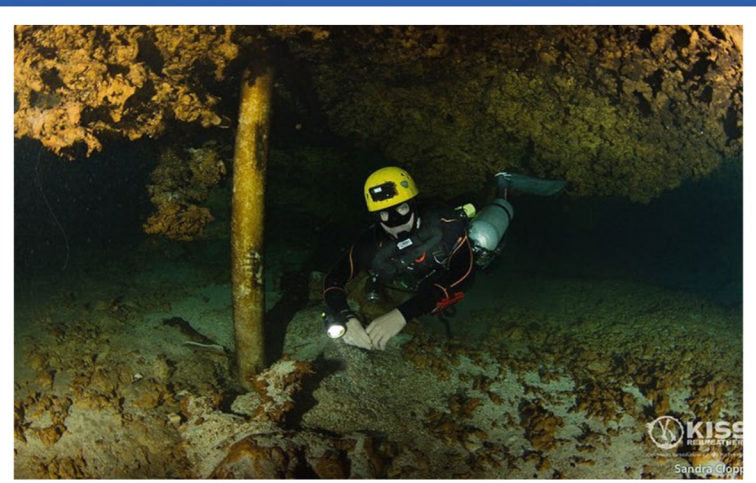

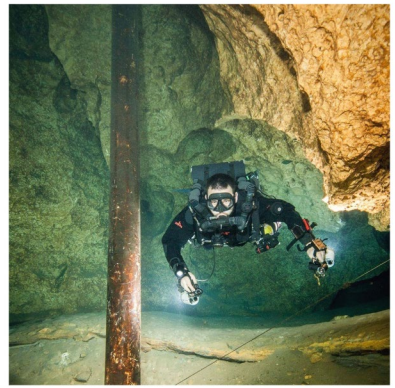

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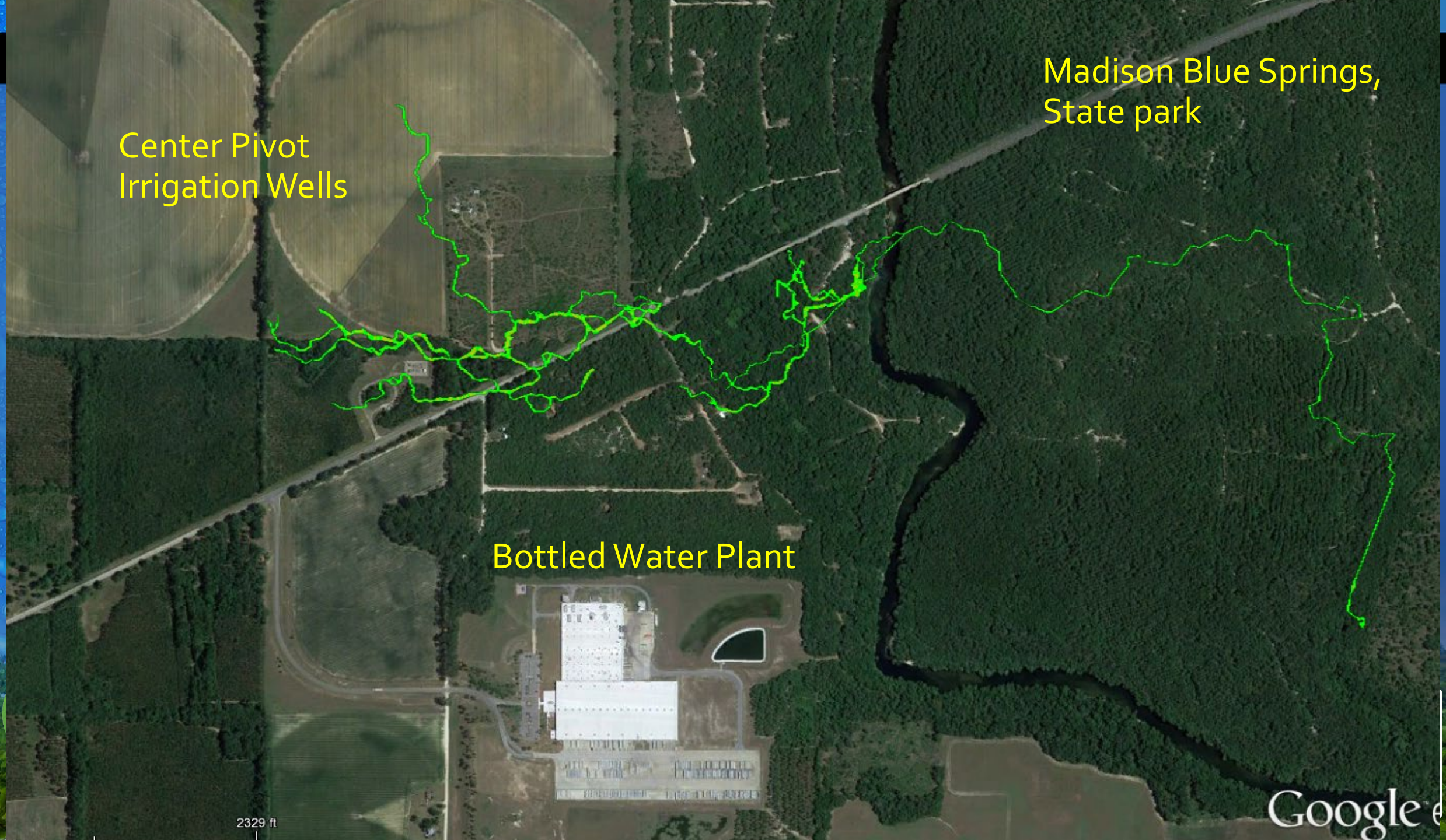
Center Pivot
Irrigation Wells
Madison Blue Springs,
State park
Bottled Water Plant
2329 ft
Google

Conduit to the Aquifer

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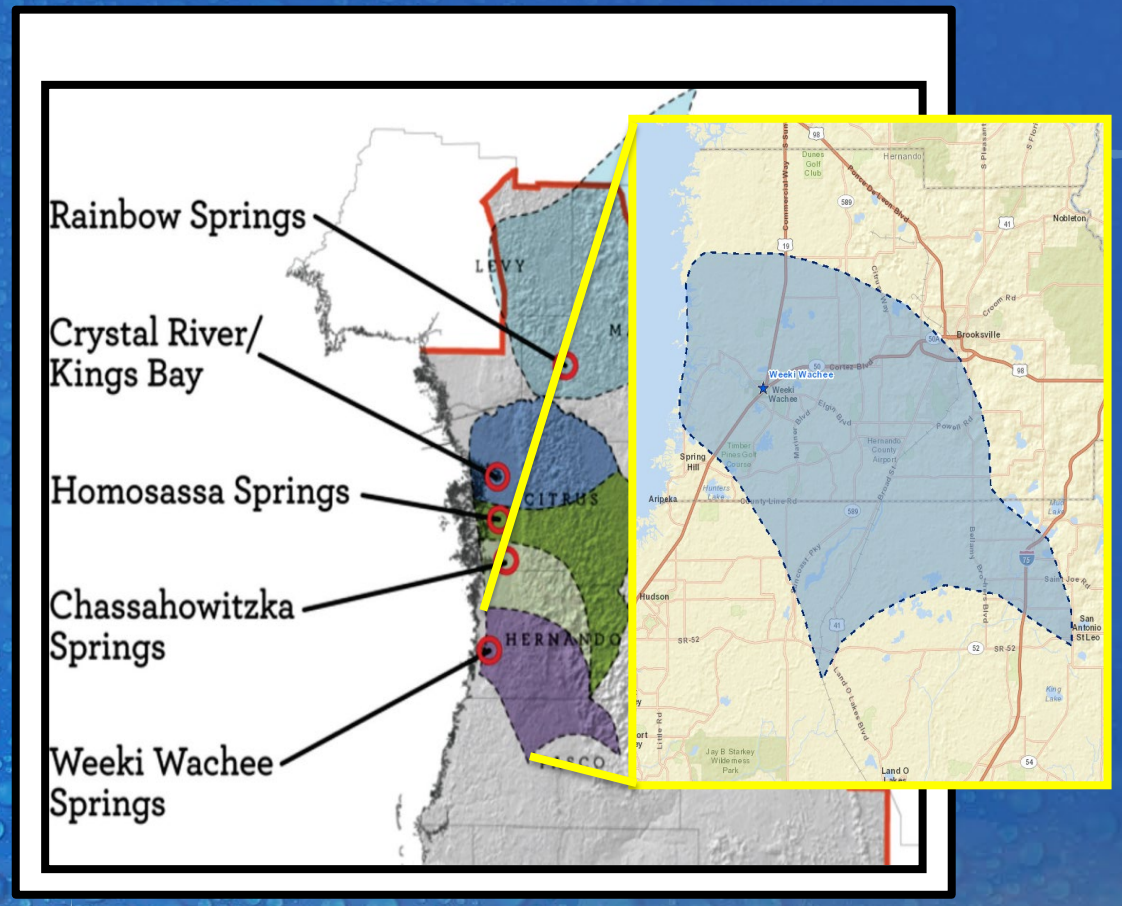

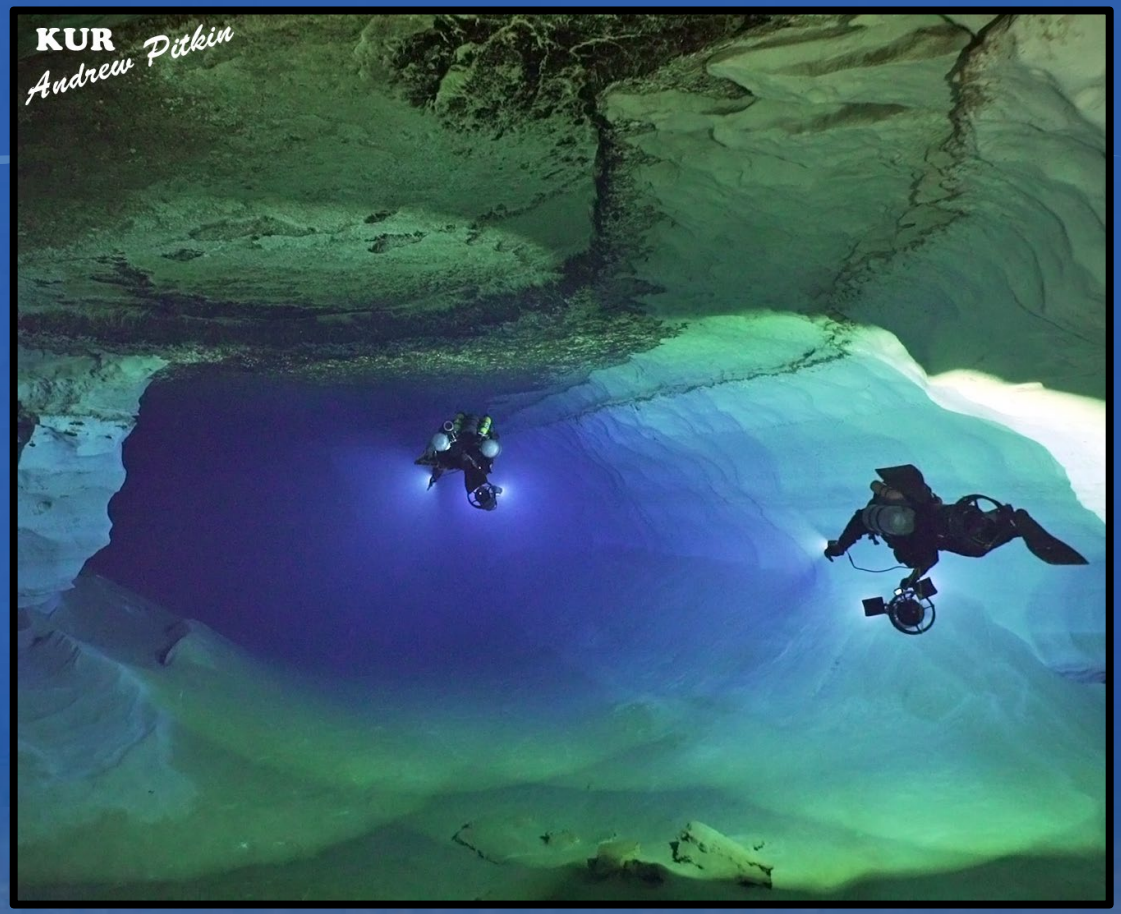

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Questions?